

Title Effect of preharvest handling on Diamond and cp-88-8 peach cultivars (*Prunus persica* L. Batsch) when alternated with corn and bean crops

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Abstract

Preharvest quality depends on several factors that take place in the orchard during the preharvest stage. Among them is the handling of the orchard before harvest. Few investigations have focused on the influence of agricultural practices, such as the alternation of cultivars and its influence on the postharvest quality of the product. The objective of the present work was to evaluate the postharvest quality of peaches produced by an alternated crop system of corn-bean-peaches, in residual humidity soils with no irrigation system (rain-dependent). Four factors were evaluated: type of cultivar (Diamantex and CP-88-8x), density of population (333 and 444 trees ha⁻¹), manure (0 and 40 kg tree⁻¹ year⁻¹) and irrigation deficit (0 and 240 L water tree⁻¹ year⁻¹) in an alternated crop system corn-bean-peaches, in soils with residual humidity and no irrigation system located in Puebla, Mexico. Each factor had two levels which gave a factorial 24. Treatments were under a complete random plot designed in the field. Each plot was divided in two. Corn and bean were sown alternatively on both sides of a tree file. Fruit quality was evaluated using the following parameters: weight, equatorial and polar diameters, firmness, color, total soluble solids, and the activity of the enzymes phenylalanine ammoniolyase and polyphenoloxidase. Fruits obtained from the 'CP-88-8x cultivar had higher weight and firmness. The fruits grown under high population density, manure, and irrigation conditions had higher weight, while fruits from trees cultivated with low manure and no irrigation had higher firmness. 'Diamantex fruits had a higher diameter and total soluble solids (SST). Polar diameter and SST were higher in fruits of trees grown under lower density conditions, with manure and irrigation. The results of this study suggest that both the type of cultivar and the agricultural practices play an important role in the postharvest quality of peaches.